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Students of Medicine

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THE history of medicine is only too often a dry catalogue of names and dates, when it should be a record of the shifting currents of medical thought through the centuries.

Some years ago, when reading histories of medicine, I was struck by the fact that very little was said about the student of medicine; what manner of man he was, how he lived, and how he worked in those bygone days. It is a difficult subject, for records are scanty, and, as Sir Thomas Browne has said, "the iniquity of oblivion blindly scattereth her poppy."

It is my intention, however, in this address, to try to show you something of the life of the student of medicine at various periods within the last thousand years; and, in doing so, to demonstrate how the past explains and influences the present.

Between the fall of the Western Roman Empire in the fifth century, and the establishment of the universities in the twelfth century, there is a great gap of seven hundred years. When the tide of invasion overwhelmed Western Europe, the monasteries stood out like lighthouses in the sea of barbarism, and as Rashdall[1] has said, "the clergy were almost the only class which possessed the rudiments of knowledge in the general extinction of Roman civilization." So it is to the monasteries that we turn for our student of medicine as he existed one thousand years ago.

MONASTIC MEDICINE.

Among the most precious possessions of the mediæval monastery were the manuscripts of classical literature and classical medicine. They were almost the only relics of the great days that were gone; of "the glory that was Greece and the grandeur that was Rome."

The Monastic Rule, passed at Aix-la-Chapelle in the year A.D. 817, imposed as a duty the copying of manuscripts and the care of the sick.[2]

"The Scriptorium of the Abbey," says Fisher,[3] "was the only secure centre for

literary work, and the monkish scribe the chief pillar of learning. Much of our scholarship, not a little of our historical knowledge, is founded on the diligence of scribes, many of them nameless, who have toiled over crabbed manuscripts by a feeble rushlight in the hope that the labour of their pens might be acceptable unto the Lord."

Many monasteries were built in remote districts, and so escaped those "risks of siege, fire, and plunder to which mediæval towns were so liable."[4]

As the years passed they accumulated large numbers of medical manuscripts. For example, there were 118 medical treatises in the library of Dover Priory, and 230 in that of the Abbey of St. Augustine at Canterbury.[5] Most of these libraries contained copies of the works of Hippocrates and of Galen. Galen was imperial physician to the Emperor Marcus Aurelius in the second century, the flourishing days of the Roman occupation of Britain, and it is not improbable, as Sir Norman Moore has said, that men who actually consulted Galen about their health may have tramped down the Roman Causeway in Cheapside to the north of the Thames.[6]

Chaucer has given us a list, in the "Canterbury Tales," of the fifteen medical works, Greek, Roman, and Arabic, with which his "Doctour of Phisik" was familiar. The very survival of these manuscripts through the previous centuries of storm was due to the monkish scribes, and it is their proud claim that they "guarded the gates of learning in Europe."[7]

The order of Saint Benedict also placed the care of the sick above all things. In each monastery was a monk appointed to give medical care to the brethren, to the poor of the district, and also to strangers; to "the way-worn pilgrim knocking at the gate, the infirm man bent with age, and the stricken leper in his sombre gown."[8] This monk, the *infirmarius,* was the real student of medicine in the Dark Ages.

It is noted by a French authority,[9] that the monk-physicians abroad even took pupils, and founded little schools named after abbeys and cathedrals. They were not without clinical knowledge. They recognized, for example, the collapsing pulse of aortic regurgitation, and this they called the "pulsus caprizans," the leaping pulse. They also noted the feeble flicker of fibrillation, and this they termed the "pulsus vermicularis," or worm-like pulse; and to his description of these two pulses, the monkish chronicler adds the grim note, *"Redolentque sepulchrum"*—"They smell of the graveyard."[10] Their activities were not always kindly regarded by their superiors; and one who had left his monastery to practise medicine was stated, somewhat tartly, by his abbot to have done so "through love of filthy lucre and a vagabond life." Perhaps their modesty about their accomplishments is best illustrated by the doleful remark made by one of them : "How many men shall die before I become master of this mystery, God knoweth."

In order to provide for emergency, the *infirmarius* slept in the infirmary, whether patients were present or not. He provided, from monastic funds, medicine and comforts for the sick, materials for cleaning the room and lighting a fire, and fresh rushes for covering the floor.[11]

Venesection was carried out as a routine, by the *infirmarius,* four times in the

year—in February, April, September, and October, but not during Lent, or during the work of harvest-time.

It is interesting to reflect that the practice of venesection goes far back to primitive times. When illness was held to be due to anger of the gods, the letting of blood by the priest was a direct personal sacrifice to propitiate an angry deity. And if we take the view that anatomy was first studied by the Egyptians during their practice of embalming the dead, we can trace a beginning in religious observance of the two great sister-sciences of surgery and anatomy.

The building set aside as an infirmary was small and primitive to modern eyes. It had only a few rooms—one for the "valde infirmi," the patients who were very ill; one for the medicus, or monk-physician; a room where patients were placed after bleeding; and a warm room for sweating, probably heated by some method such as the hypocaust, for though we pride ourselves on our plenum system of ventilation, the Roman villas in Britain were warmed by a system of central heating.

Patients in the infirmary were strictly disciplined. The sick man could discuss his ailments with the *infirmarius,* but there was no general conversation except at recreation-time, and even at meal-times the inmates ate in silence.

It is easy for us to smile at the tiny monastic hospital with its venesection, its purgation, and its sweating; but when one considers the modern treatment of uræmia—venesection, purgation, and sweating, perhaps we have not advanced so very far in a thousand years. Such as it was, it was the "sole solace of the poor and needy, and refuge of the stranger and destitute." It is true that beds were probably a luxury, and that the patients slept on pallets of straw, but the diet was ample, from any records we have, and the bulk of the food came fresh from the monastery garden.[12]

The food of the patients was prepared by a "prudent, skilful cook," chosen by the *infirmarius*. "Day and night he was to show himself solicitous for the general welfare of those in the infirmary. He had to help in the general kitchen, and obtain from thence the requisite meals for the sick."[13]

There was often a herbarium, or herb-garden, beside the infirmary; and much importance was attached to a knowledge of herbs. "Learn to know the properties of plants and the art of mixing remedies," said Cassiodorus to the monks. "If the knowledge of the Greeks is not unknown to you, you have the book of herbs of Dioskorides, who has pictured forth the plants of the field with surprising accuracy."[14] "One of the pleasantest pictures," says Withington,[10] "in an age presenting little of that character, is the peaceful monk, gathering his herbal simples and brewing decoctions comforting to the minds and bodies of his neighbours." Herbals were often compiled in the monasteries: the "book of herbs" being the ancestor of our "Materia Medica"; and Walafrid Strabo, who flourished about A.D. 850, has left us twenty-three little poems in excellent Latin on the favourite herbs in his monastery garden. The advertising columns of a modern newspaper show that the herbalist is still with us, a survivor from the earliest days of medicine.

The kind of herbs used by these early monks may be learned from a list of those

grown in the ninth century by St. Gall. Some were chosen on account of what Stuart calls[15] "the touching belief that nature had indicated which plants were good for certain diseases by imprinting the image of a bodily organ on their leaves. The heart-shaped wood-sorrel was useful for cardiac cases; and the liver-wort or hepatica, for liver cases." Or preference may have been given to plants mentioned in Scripture, such as "anise, mint, and cummin." These were to be found in the monastic garden; and anise and mint are still in our pharmacopœias to this day.

It was much later on that the mediæval monk began to dabble in chemistry. It is said that the works of Basil Valentine, a Benedictine monk, contain the earliest mention of hydrochloric and sulphuric acids, and the salts of antimony. Had his works been published when they were written, he would have been regarded as the founder of medical chemistry, an honour now held by Paracelsus.

It is easy to see how an extern service grew up. Little villages sprang up around a monastic foundation. The abbey has long since perished, but the village survives; in Northern Ireland we may instance Greyabbey and Whiteabbey.

An almoner was appointed to visit the poor, the sick, and the bedridden of these villages. The *hospitarius,* or guest-master, looked after the welfare of visitors; for the great abbeys, especially on the main roads, were the "halting-places of rich and poor whom business, pleasure, or necessity compelled to travel on the king's highway."

Illness must often have overtaken the mediæval traveller, and as examples of those whose last illness was treated in a monastery, one may quote Edward the First, King John, and Cardinal Wolsey. Helpless sufferers were brought to the monastery for treatment, and D'Arcy Power mentions that in the early days of St. Bartholomew's Hospital, then a religious house, the patients treated were the sick found in the streets, who were admitted freely and without question.[16] Beadles were also appointed to bring in patients, and in this custom one may trace the beginnings of a primitive ambulance service.

And now to sum up. Just as our word 'hospital' is derived through the Latin *'hospitale,'* a guest-house, from *'hospes,'* a guest, and just as the tiny monastic infirmary was the seed from which sprang the great hospitals of to-day, so the placid, kindly *infirmarius,* the monk-physician, was the ancestor of our modern student of medicine.

THE MEDICAL SCHOLASTICS.

Student Life at Mediæval Oxford.

Probably the greatest single achievement of the twelfth century was the establishment of the universities; and among these the University of Paris rapidly became world-famous. It must be remembered that the greater part of England and France were at that time united as one kingdom, and it was during this union that the University of Oxford was founded. Then, in 1229, a great riot at the University of Paris led Henry III to issue his famous invitation to students from Paris "to come into England and settle in what cities, boroughs, and villages they pleased to choose." Oxford and Cambridge shared alike in the influx of Parisian students.

Latin was the living language of all abodes of learning, and the boy destined for the university puzzled out his elements of Latin in the psalters and missals of his cathedral or monastic school. Life was cheap in the thirteenth century, and his career at the university began early. Twenty was the minimum age for graduation; and, as many courses lasted seven years, he came up as a freshman at the early age of thirteen. But it was not the Oxford of to-day.

"In the stead of long fronts of venerable colleges," says Green,[17] "history plunges us into the mean and filthy lanes of a mediæval town. There lived thousands of boys, huddled in bare lodging-houses, clustering around teachers as poor as themselves, in church-porch and house-porch; drinking, quarrelling, dicing, and begging at the corners of the streets. Mayor and Chancellor struggled in vain to impose order on this seething mob of turbulent life.

"Among this strangely mingled mass, society and government were democratic. Wealth, strength, skill at arms, and pride of ancestry, all went for nothing in the lecture-room. It was a real Republic of Letters."

The first university statutes were promulgated in 1430, just over five hundred years ago. They did not interfere with the private life of the student, but they tried to impose curfew, to compel attendance at lectures, and to enforce residence in a Hall. As mediæval students were exposed often to the most bitter want, we read of one Hall whose students were regularly turned out to beg in the streets.

These poor students sometimes became servitors to a master, or to a rich colleague, and at Cambridge, the bursar's accounts show that they dug foundations, carried earth and bricks, and did other unskilled labour.[18] It became a recognized mediæval charity to receive a poor student into one's house, or to support him at the university, or even to give him something at the door. "Alms! give alms to a poor scholar for the love of God!"

The room in which he lived was a cold and cheerless place, as there were usually no fires in either classroom or living-room. The windows were unglazed, and closed by wooden shutters; the ceiling unplastered, and the floor strewn with rushes. The furniture consisted of a table, a few "playne joyned stools," a truckle-bed in the corner, and a chest for personal effects.[19]

Electric light is now a commonplace of civilization, but candles furnished the only means of illumination in those days, and they were held to be very dear at twopence a pound. Therefore it was the custom for students holding an evening discussion to cluster round the light of one candle. We may picture them, seated round a fire, if they were very fortunate, with the candle guttering in the draught from the unglazed window, and the firelight lighting up the eager faces :—

"They sit there, in the shadow and shine
Of the flickering fire of the winter night,
Figures in colour and design,
Like those by Rembrandt of the Rhine—
Half darkness and half light."

Food may seem cheap to modern eyes with meat a farthing a pound and cheese

at a halfpenny a pound. Tea and coffee were unknown, and beer was twelvepence a quart. But "Oxford fare" had a very bad name.

It was difficult and expensive to transport food to a mediæval university town, and the student was often reduced to great want.

Breakfast, however, was a meal that could be dispensed with by the hardy and economical. Dinner was at ten o'clock, and, for the poorer sort, was a "penny piece of beef among four, having a few porridge made with the broth of the beef, with salt and oatmeal." Supper was at five o'clock, and was often no better than the dinner.

The wealthier student was fond of vivid apparel. We read of those who "ruffled it after the fashion of courtiers, who affected lovelocks, red hosen and long shoes, and wore rings for vain-glorying, pernicious example, and scandal of others."

It is of interest to note that our modern academic gown is directly derived from the early monastic habit worn when all were "clerks." Hoods were originally worn for warmth. They were lined with fur, as is our B.A. hood of to-day, and a Papal letter of 1258 is still extant which gave permission for their use, "as the cold of these parts is vehement." The thirteenth-century graduate must have been glad of a fur-lined hood in the unwarmed buildings of a mediæval university in the depth of winter. With the introduction of silk as a lining, instead of fur, came the adoption of varying colours of silk to denote the different faculties.[20]

The long hanging sleeves of the gown are pure thirteenth-century costume, a fact which can easily be verified by the study of old memorial brasses in cathedrals.

The college cap of the 'mortar-board" type came much later, and was developed in its present form in the early seventeenth century.

It is said that the pocket which survives to this day in the hood of our university gowns is the last relic of the receptacle in which the mediæval student placed the crusts of bread which he had begged on his daily rounds.

Before proceeding to study medicine, the mediæval student must take a degree in arts. As Cholmeley[21] points out, "the arts course was a severe test. To have passed through it meant that a man could hold his own in ordinary life, and that he had mingled with men from various districts of his native land, and with foreigners for seven or eight years. A Master of Arts possessed a very good mental training; and, if he proceeded to study one of the other faculties, he would do so better equipped than many a student who nowadays begins the study of medicine."

But the study of medicine was very different from that of to-day. The mediæval student knew nothing of clinical, or bedside, medicine, nothing of the study of anatomy by dissection, and nothing of written examinations. His progress was secured only by compulsory reading of textbooks, and enforced attendance at lectures in rooms where the "masters could lecture, each with some precious volume open in front of him, while the students sat on the floor, took notes, and applauded or hissed him, like a rowdy audience at the theatre."[22]

These lectures began at six in the morning, and lasted till ten. After dinner at ten, there were further lectures, and the student was expected to study till supper at five o'clock. Informal classes were held by the lecturer, at which students were

questioned in turn. These were termed "resumpciones," and seem to have been the equivalent of our modern "grind in medicine."

To the mediæval student, the written word was the end of all discussion. Just as Aristotle was supreme in logic, Cicero in rhetoric, and Paul in theology, so Hippocrates and Galen were supreme in medicine. They were regarded as infallible authorities, and they dominated the medical world.[23] "The young people," says John of Salisbury, "pride themselves on their knowledge of Hippocrates and Galen, and introduce their aphorisms on every occasion."[24] It was these endless disquisitions that won for these men the title of "Medical Scholastics."

Among the textbooks of the time may be noted the "Aphorisms," the "Prognostics," and the "Regime of Acute Disease," of Hippocrates; the "Crises and Critical Days" and the "Simple Medicine" of Galen; and the "Fevers" of D'Isaac, or the "Antidotes" of Rhazes; the last two marking the rising influence of Arabic medicine, then becoming known through the Moorish domination of Spain. On these authorities the student had to "respond," and to "oppose," in the school of the regent doctors, and it was at this time that the word 'professor' was first used. It was derived from 'profiteri,' to expound; the professors being those of the teaching doctors who publicly expounded a certain subject.

The Faculty granted three degrees, those of bachelor, licentiate, and master. The higher degrees were obtained by further years of reading and disputation. Graduation ceremonies were the occasion of much speech-making. The candidate gave a discourse, took the oath, and was invested with the insignia of his office. He was also expected to give a dinner to his examiners.[25]

Perhaps we may best judge these mediæval students by the letters they wrote, the songs they sang, and the statutes which the university passed to restrain them. Here is a student's letter, written from Oxford in the year 1220 :[26]

"The city is expensive, and makes many demands. I have to rent lodgings, buy necessaries, and provide for other things. Wherefore I beseech your paternity that, by the promptings of Divine pity, you may assist me. For you must know that, without the aid of Ceres and Bacchus, Apollo grows cold." That letter was written 716 years ago, and though its phrasing is archaic, its appeal is very modern.

A handful of their songs has come down to us—part of the famous Goliardic verse. Two of the most popular are still to be found in students' song-books, the first being the "Gaudeamus," which, as Miss Waddell[27] says, "seems to ring in the twilight streets of all the old university towns in Europe." The other, the "Mihi est Propositum," was written in Germany by the Archpoet,[28] whose real name we do not know. Dying of consumption, coughing, starving, he could write verses which have the genuine swinging lilt of the students' song :—

"Down the broad way do I go,
Young and unregretting;
Wrap me in my vices up,
Virtue all forgetting."

Of the university statutes, perhaps I may quote the beginning of one in its sonorous Latin :

"Scholares, ebriosi, noctivagi cum instrumentis musicis" ("Students, drunken, wandering by night with musical instruments"). Imagine yourself in those narrow streets on a winter's night. The little band of revellers moves along, the light of their torches shining on the snow. From the shuttered windows of a nearby tavern comes the rattle of dice and the roar of one of the great Latin drinking-choruses. Farther up the street, shouts and the clash of steel herald the beginnings of a town and gown fight, and then at last the heavy strokes of the curfew bell ring out over the little mediæval town.

And that, ladies and gentlemen, is how your predecessors lived at Oxford University five hundred years ago.

THE NEW LEARNING.

Vesalius and Padua.

The revolt against the classical tradition in medicine did not come until the early years of the sixteenth century. It was then that the pioneers of modern medicine taught in the universities of Italy, especially at Padua; and, in order to understand the beginnings of the new medicine, one must consider the geographical position.

Since the time of the Crusades, Venice, then "at the pinnacle of her wealth and glory,"[29] was mistress of the seas. She "held the gorgeous East in fee," and into Venice poured all the trade of the Eastern Mediterranean with cargoes as varied as those of the navies of Tarshish, which bore "gold and silver, ivory and apes and peacocks unto King Solomon."

Venetian galleys traded with all the ports of the Levant, and from thence the great camel-trains and caravans constituted the overland trading route through the heart of Asia, to Bokhara, to Samarcand, and to far-away Pekin itself, as you may read in the travels of Messer Marco Polo, the Venetian. "This was the ancient 'Silk Road,' the most romantic and culturally the most important trade route in the history of the world."

With new markets came new ideas. Asia had never fallen under Roman influence. She had "let the legions thunder past, and plunged in thought again," but Asiatic thought had never been poured into the Roman mould. The influence of Arabic medicine was widespread, exerted chiefly through the great medical schools of the Moorish kingdom of Spain.

Drugs and spices from Asia were being introduced into treatment, and Arabic names remain in our pharmacopœia to this day—myrrh and camphor and senna, and "all the drowsy syrups of the East."

"It was in Italy,"[30] says Castiglioni, "that the Latin world came into contact with the half-forgotten treasures of Greek wisdom, with the wisdom which the Arabs had borrowed from the Greeks, and with the original products of the remoter East. . . .

"The stream of foreigners was continuous, and the intercourse of the Italian markets with the East and Egypt, France and Spain, Germany and England, was constant and flourishing."

All these diverse currents of thought met in Venice; and Padua, as Renan has

said, was "the Latin quarter of Venice." So it was in Padua that the new medicine was born.

The leader of the revolt against classicism was a young man from Northern Europe. His family came from the little town of Wesel, so he was Andrew from Wesel, known, according to the fashion of the time, as Andreas Vesalius.

Among his contemporaries and immediate successors were men whose names are daily heard in every dissecting-room in Europe — Fallopius, Eustachius, Morgagni, Fabricius, and Sylvius. Castiglioni[30] points out the great wisdom of the Venetian Republic, which guaranteed freedom of study to all nations, irrespective of race or religion.

"Nations" were formed to give hospitality to the students. At Padua the German "nation" alone had 977 students in the medical faculty in the sixteenth century, and the English "nation" had its chancellor, its beadle, and an important position in university life.

The main route to Padua lay over the Simplon. The journey was usually made on horseback, and the discomfort of the inns is well described by Seebohm in the "Oxford Reformers" :[31] "One room serves for all comers, and in this one room, heated like a stove, eighty or ninety guests stowed themselves, books, baggage, dirt, and all.

"Their wet clothes hang on the stove to dry, while they wait for supper. There are footmen and horsemen, merchants, sailors, women, and children, sound and sick, combing their hair, wiping their brows, and making as great a confusion of tongues as there was at the building of Babel.

"At length, in the midst of the din and stifling closeness of this heated room, supper is spread, a coarse and ill-cooked meal, which our scholar hardly dares to touch, but is obliged to sit out to the end for courtesy's sake. And when past midnight he is shown to his bed-chamber, he finds it to be rightly named: there is nothing in it but a bed, and the last and hardest task is to find between its unwashed sheets some hours of repose."

A hundred and fifty years later John Evelyn rode over the Simplon on his way back from Padua to London, and noted a fact of medical interest :[32]

"Amongst these mountains inhabit a goodly sort of people having monstrous wens of flesh hanging to their throats, some of which I have seen as big as a hundred-pound bag of silver hanging under their chins; among the women especially, and that so ponderous that, to ease them, many wear linen bound about their head and coming under the chin to support it, but *'quis miratur tumidum guttur in montibus?"*

Here he quotes Tacitus to the point, thus showing that the Romans had noted the association of goitre with hilly districts, fifteen hundred years ago.

We can imagine the English sixteenth-century student riding down from the Alpine passes through the fields and vineyards of Northern Italy, till at last he caught sight of Padua, the walls, the domes, and the church spires of the typical mediæval town.

"Once inside," says Newman,[33] "he would find himself in the dark, tortuous, narrow streets, arched, and lined with arcades and overhanging stories with small latticed windows."

His lodgings were poor and mean, food was bad, the windows were unglazed and often filled with sheets of linen, artificial light was primitive and expensive, and there was no organized recreation.

Luke was the beloved physician *"medicus carissimus,"* so the medical session began on St. Luke's Day, the 18th October. It lasted for ten months, and during this time the human body was several times dissected in public by the professor of anatomy. Great preparations were made by the students for these "public anatomies."[34] Trustworthy treasurers were appointed to buy knives, trephines, mallets, and sponges. Torches were also required to light the theatre at night. Invitations were sent to the chief officials of the city and the university; and before dissection began, an introductory address, preceded by music, was given by the anatomist.

Vesalius carried out his dissections in a temporary wooden theatre, but in the time of Fabricius a permanent building was erected, which still bears his name.

A "public anatomy" after nightfall must have been a macabre scene. The only light was provided by two candelabra, and by torches held by students. In the small oval central space was the table with Vesalius conducting the dissection. Round this stood the dignitaries of the city, the nobles and notabilities of Padua, grave and attentive in their picturesque mediæval silks and velvets.

Farther out in the dimness were the six concentric galleries, packed with eager students, so herded together that their heads were only three feet above those of their comrades in the row below. The scene flashes up before us, as clear and vivid as a cinema-film, then it slowly fades out again, in the dancing flicker of the torch-light.

Such was the golden age of Padua. Its fame was worldwide. Shakespeare mentions Padua in "The Taming of the Shrew," and the great Dr. Johnson "had a mind to go to Padua."

When Harvey, the discoverer of the circulation of the blood, went to Padua in 1598, it was considered a bad year if less than a thousand students matriculated. Each student paid a hundred gold ducats yearly.

The salaries of the professors varied. Fabricius, who was Harvey's tutor, received eleven hundred florins, but it is said that the great Galileo, founder of modern astronomy, never received more than a thousand florins.

"The gold ducat and the florin appear to have been coins valued at about nine-tenths of the English gold half-sovereign, but their present value, as measured in purchasing power, is not less than four times that of the period of Vesalius."[38]

What does the modern medical student owe to Padua?

Vesalius ended the domination of the written word. It is to him we owe the beginning of modern anatomical teaching, even though, as Castiglioni observes, "it began with something between a rite and a theatrical performance."

To Morgagni we owe the association of medicine with pathology. For sixty years

he scarcely missed a lecture, and at the age of ninety, in a trying winter, he held the whole course of anatomy, though the great halls had no stoves.[36]

To da Monte we owe the very beginnings of clinical medicine, when he took students to the Ospedale San Francesco, and lectured to them at the bedside. In the year 1567, a student named Heurnius, from Leyden, studied at Padua. He became professor of medicine at Leyden in 1581, and was destined to hand on the very beginnings of clinical teaching from Padua to Leyden.

Vesalius, Fabricius, and Morgagni—such were the great teachers of Padua, and the European student flocked to hear them, notwithstanding his bitter poverty and the hardships of his journey.

The great story of the Vagantes, the mediæval students who wandered from city to city in quest of learning, has been told by a graduate of Belfast University, Miss Helen Waddell.

For the wandering clerks, like the Latin tongue, knew no frontiers. "Swift and unstable as the swallows," wrote one of them, "hither and thither, like a leaf caught up by the wind, or a spark in the brushwood, we wander, unweariedly weary."[37]

THE RISE OF CLINICAL METHODS AND CLINICAL TEACHING.

Sydenham and Boerhaave.

The evolution of modern medicine has been slow. The monasteries kept alive the feeble flame of classical medicine, through the blackness of the Dark Ages. The rigid scholasticism of the twelfth century was followed by the breakaway from classical tradition in anatomy which came with Vesalius at Padua. But it was not until over a century later that medicine also broke away from its classic forms, and the pioneer in this case was an Englishman.

Thomas Sydenham was born in 1624. His studies at Oxford were interrupted by the great Civil War, in which he and his brothers served on the side of Parliament; and it may be that his Puritan intolerance of ecclesiastical authority was reflected in his dislike for dogma and scholasticism in medicine.

After obtaining his medical degrees, he settled in practice in King Street, Westminster, where Whitehall now stands. King Street was a famous thoroughfare.[39] Down it Charles the First had passed to execution on that bitterly cold January morning in 1649, and Cromwell lived there and held his court in the old palace of Whitehall close at hand. At the lower end of the street flowed the Thames, not between massive embankments as it flows to-day, but edged with swamps and marshes. Fever was terribly rife in London at the time of the Stuarts, and Sydenham set himself to study these fevers at the bedside, and to describe them as he saw them, instead of using descriptions written by Hippocrates and by Galen. He was the first and greatest of our clinical clerks, and some of his descriptions have not been bettered to this day. He held no hospital appointments, he taught no students; he was what we would describe as a general practitioner; and he revolutionized clinical medicine. One is irresistibly reminded of James Mackenzie, a general practitioner in Burnley two centuries later, who founded modern cardiology

by accurate clinical observations at the bedside, and records taken by a polygraph constructed by a local watchmaker.

Sydenham's great work in fevers was published in 1676, and was a record of his observations extending over fifteen years. His choice of this subject was probably due to the fact that fevers then made up about two-thirds of all medical cases,[40] whereas they are now only responsible for about one-tenth of those recorded. Of the year 1665 he writes: "That tertian fever which in the said year so much prevailed, contracted itself into a small compass. After autumn, the quartans decreasing, the continual fever now violently raged all spring, at which the vernal intermitting fevers succeeded, which, going off about May, the smallpox here and there appeared, and disappeared at the approach of the autumnal epidemics."[41] From this terrible picture we assume that malaria must have been endemic in London, and we know that Cromwell suffered severely from the "tertian fever," which ultimately killed him.

Sydenham also describes rheumatic fever, and his account of chorea was so accurate that the name "Sydenham's chorea" may be heard to this day. The whole art of medicine is observation; and here is part of his description:

"Chorea is a certain kind of convulsion which chiefly invades boys and girls from ten years of age till puberty. First it shows itself by a certain lameness . . . of one of the legs, which the patient drags after him like a fool, and afterwards it appears in the hand. . . . If a cup of drink be put in his hand, he represents a thousand gestures, like jugglers before he brings it to his mouth. His hand being drawn hither and thither by the convulsion, he turns it about for some time, till at last, happily reaching his lips, he flings it into his mouth and drinks it greedily, as if the poor wretch delighted only to make sport."

Sydenham founded modern epidemiology, but he went farther than the mere observation and collection of facts. He attempted to distinguish one disease from another, so beginning the scientific distinction known as differential diagnosis. For this is the method which governs advance in medicine, or, indeed, in any other science. First there is the collection of facts and the attempt to differentiate one series of facts from another. Then comes the deduction of the laws which govern these groups of facts, and medicine progresses when its laws are understood. Clinical observations are visible, but they may be transitory and changing. The law which governs them is invisible, but it is permanent, and it is the law that endures. For the things that are seen are temporal, and the things that are unseen are eternal.

Another fifty years were to pass before the introduction of clinical teaching in medicine, and this time the scene shifts to Holland. Previous attempts had been made to introduce instruction at the bedside, but essentially our present system of clinical instruction is due to the genius of one man, Hermann Boerhaave, who was born in 1668, and became professor of medicine at Leyden in 1709.

Boerhaave had a great respect for Sydenham, referring to him always as the "immortal Sydenham." Sydenham was the founder of modern clinical medicine, Boerhaave the exponent of modern clinical teaching. As the athletes, in the famous

simile of Ovid, hand on the torch one to another in the relay race, so, in medicine, we see the torch of progress handed on from a great man to his successor.

In the seventeenth century, Leyden must have been a quiet, sleepy Dutch town, of the type that Jan Vermeer has immortalized in his landscapes. In the town was an old convent, which had been converted into a small hospital as early as 1595.[42]

Heurnius had made there a tentative effort to introduce clinical teaching as he had seen it at Padua, but it was left for the genius of Boerhaave to develop it on the lines on which it is practised to-day.

There were only two wards of six beds each—a ward for men and a ward for women, yet half the doctors in Europe were trained round those twelve beds. Students came in such number that the little wards were crowded, and some were forced to watch the clinical instruction from balconies.

It was here that the methods of clinical investigation, and of clinical instruction, were first worked out. Day by day Boerhaave went from bed to bed, recording his histories and examining patients. Students were called up to examine cases, to answer questions, and to prescribe treatment.

Boerhaave possessed a genius for getting at the essential facts of a case, and expressing them in clear and graphic language. He became immensely popular with the motley throng of students of all nations who jostled one another in his little wards, for they appreciated his kindness of heart, his simplicity, and the painstaking care with which he taught them. Men were there from every European country, and it was men from Scotland who were destined to introduce his system of clinical teaching to Edinburgh University.

A few years later Leyden became the most famous school of medicine in Europe, and men went there to take out post-graduate courses, as they go to the Mayo Clinic to-day.

The written works of Boerhaave are long since dead, but his personality still lives. Every time you go round the medical wards of this hospital for clinical instruction, you are paying a silent tribute to the memory of Boerhaave, and every time you take careful notes of a medical case, you are serving as clinical clerk under old Thomas Sydenham.

That is how Boerhaave became known as the "teacher of Europe."[44] He was a man of great erudition, for the practice of medicine depends on more than the knowledge of purely medical facts. It demands at the same time development and culture of the mind. As was said of a practitioner long ago : "To a fair knowledge of medicine, he united a shrewd and profound knowledge of mankind; and so he succeeded where others failed."

To his clinical work Boerhaave added also the teaching of the theory of medicine. He began the day, at seven in the morning, by demonstrating botanical specimens in the physic garden.[43] He lectured also on physics and chemistry, and touched on anatomy and physiology. This was the first attempt to organize a medical curriculum; and it is curious to reflect that the order survives unchanged to this day. One begins with botany, physics, and chemistry, passes from these to anatomy and physiology, and so on to medicine.

Boerhaave must have been a man of great physical strength, for he taught for five or six hours daily during the session, for a period of twenty-nine years, from his appointment in 1709 till his death in 1738.

It is an attractive picture: the big, forceful, kindly teacher, doing his rounds in his little wards, and patiently working out his system of clinical instruction among the jostling crowds of eager students.

It is true that he spoke to his own generation, but after two centuries we are still "listening in" to his clinical teaching in the wards of the old hospital in Leyden.

SCOTTISH MEDICINE IN THE EIGHTEENTH CENTURY.

"In the seventeenth century," says Trevelyan,[45] "Scotland, as poor as a thin soil and mediæval methods of agriculture could make her, and still without any considerable trade with England or across the sea, sent forth her most adventurous sons to serve abroad, as captains and ancients in the armies of Gustavus Adolphus."

Scott has shown us in the "Legend of Montrose" the perfect type of wandering Scots soldier of fortune in the person of Dugald Dalgetty. And just as the Scottish swordsman travelled far afield over Europe, so also did the wandering Scottish scholar.

In the year 1718 there sat on the benches of Leyden University eight or ten young men from Edinburgh,[46] pupils of the great Boerhaave. Among these were two destined to become famous—Alexander Monro, first professor of anatomy, and John Rutherford, first professor of clinical medicine at Edinburgh University, and grandfather of Sir Walter Scott. These men introduced into the new school of medicine at Edinburgh the system of teaching which they had learned from Boerhaave in Leyden.

The foundation of the Edinburgh medical school may be attributed to the foresight of John Monro, the father of Alexander Monro. "As a surgeon in the army of King William the Third, he had seen the necessity for improved medical education,[47] and, as a travelled man, he knew what medical education was on the Continent.

"His affection for his only son, and his desire to see a medical school in Edinburgh, became united in the idea of his son being the founder."

That is why Alexander Monro was sent as a student to Leyden in 1718, where he became a "favourite and admiring pupil of Boerhaave."[47]

In 1720, on his return to Edinburgh, Monro delivered his first series of lectures in anatomy and surgery, the first regular lectures on any subject ever read in Edinburgh.[48]

He continued to give these lectures without a break for almost forty years. He first taught in Surgeons' Hall, but in 1726 removed to the university. At that date he and his colleagues were given university appointments, with full power to examine candidates. The appointments were made *"ad vitam aut culpam."*[49]

It is difficult to render the inimitable terseness of the Latin, but "Death or disgrace" is the phrase nearest to the meaning.

The next step was to provide clinical instruction, and in 1736 a Royal charter

was obtained for an infirmary, which was opened in 1741, and in which clinical instruction was given for 138 years, till it was superseded in 1879.

It was there that Rutherford began his system of clinical teaching which was to become world-famous. Here is his own description of his aims:

"The method I propose to pursue is to examine every patient before you, lest any circumstance be overlooked. I shall give you the history of his disease in general; second, inquire into the cause; third, give you my opinion how the disease is likely to terminate; fourth, lay down the indication of cure which will arise. I shall make as accurate observations and as just conclusions as I can. I hope this will produce a good result, and help to make you real physicians."[46]

This was written about two hundred years ago. Could we write a much better summary to-day? It was in this manner that bedside clinical teaching was introduced, with its attendant systems of clerking and dressing, now in use all the world over.

Rutherford's standard textbook on medicine was Boerhaave's "Aphorisms"; and St. Clair, lecturing in physiology, used Boerhaave's "Institutes."[50] Nothing could better illustrate the genius for teaching which Boerhaave must have possessed, than the fact that the University of Edinburgh was founded on his system, both clinical and theoretical.

Alexander Monro (primus) held the chair of anatomy from 1719 till 1754, when he was succeeded by his son, Alexander Monro (secundus), whose tenure of the chair lasted until 1808, a period of fifty-four years. In his time his class grew until five hundred students attended. He was at the head of his profession as consultant physician, he was an excellent lecturer, and in research he is celebrated by the association of his name with the foramen of Monro. He handed on his chair to his son, Alexander Monro (tertius), who retired in 1846. Thus came to an end the "dynasty of the Monros," who held the Edinburgh chair of anatomy for one hundred and twenty-six years in unbroken succession.[51]

The achievement of these men was great. In a city of about thirty thousand inhabitants, and in a country distracted by the Jacobite rebellion of 1745, they succeeded in founding one of the most famous schools of medicine in the world.[47] "Students flocked to hear them from the most distant quarters of His Majesty's Dominions." Even though America was fighting her War of Independence against Great Britain, American students continued to attend, as the Scots "escaped the bitterness left by the war in the minds of Americans against England."[52] These American students became later the founder of the great American schools of medicine, just as Irish students of medicine at Edinburgh influenced the school of medicine at Dublin University, and founded our school of medicine at Belfast. For it was in the year 1784 that there sat on the benches, listening to Alexander Monro the second, a young student from Glenarm named James McDonnell, who was destined in 1827 to deliver the first lecture on clinical medicine ever given in Belfast.

Among the Southern Irishmen who studied at Edinburgh were the great names of Corrigan and Stokes in medicine, and perhaps the greatest genius of all, "who touched nothing that he did not adorn"—Oliver Goldsmith.[53]

From 1773 till 1778, a Belfastman, William Drennan, studied under Monro, and his letters to his sister are preserved in our Ulster Record Office.[54]

He shows us the discomfort of the crowded cross-channel packet in the days of sail and contrary winds.

He tells of his Edinburgh lodging at half a crown weekly, with an extra shilling for coals. "I swear to you there is not a couch in the room, and the armchair made of hard, bony mahogany."

He describes how he rises at six in the morning, strikes his flint, blows his tinder and lights his match. After stretching his legs in the meadow, he takes his breakfast of bread and milk. "From nine to one o'clock I am blown about with the wind of doctrine of the University—nine to ten, practice; ten to eleven, chemistry; eleven to twelve, materia medica; twelve to one, at the infirmary."

His letters contain many vivid touches. He is the continual joke of the lads for his endless talk of Belfast; and he dreads the final examination, with its fee of twenty-five pounds, which he describes as a "fiery trial."

Alexander Monro the second, the teacher of Drennan and McDonnell, was, as a lecturer, clear and impressive. In a memorandum to the authorities of Edinburgh University,[47] made towards the end of his career, he stated that, in a period of fifty years, over thirteen thousand students had attended the lectures given by his father and himself; and that at the rate of eighty pounds per annum for each student, over a million pounds sterling had been brought into Edinburgh.

Many instances are given, however, of the poverty and frugality of students in those days. We read of a student who spent six shillings and ninepence weekly, amounting in twenty-four weeks to eight pounds two shillings.

And here is a student describing his arrival in his lodgings: "I looked round the whitewashed room; a truckle-bed stood in the corner, some square bits of peat smouldered in the pavement of the fireplace, which had no grate, the wind began to rise, the curtainless window to rattle, and the hail to pelt. I undressed, extinguished the tallow candle, and crept into bed."[50]

Attempts made at various times to found halls of residence for students in Edinburgh, after the English model, resulted in failure.

"The Scottish student," says Sir Alexander Grant, "prizes his independence: and it must be said in general that he does not abuse it. Indeed, the habits of self-control called forth in the student who lives in his own lodgings as his own master, and there commences to fight the battle of life, are perhaps the most valuable results of his university life."[55]

Such was eighteenth-century Edinburgh, almost two hundred years ago. From Edinburgh sprang the great American schools of medicine. In Ireland she profoundly influenced the University of Dublin; and it was on the foundation of Edinburgh teaching that our own medical school of Belfast has been built.

That is why, in the history of medicine, an outstanding place must be given to Edinburgh, "the old grey, castled city, where the church bells clash of a Sunday, and the salt showers fly and beat."

EPILOGUE.

And now we have travelled down the long road which leads from thirteenth-century Oxford to twentieth-century Belfast.

It is my privilege to welcome you on behalf of the Royal Victoria Hospital, and I have tried to show you that, though you have entered your name on the roll of a hospital that is modern, yet in doing so you have become successors to a tradition that is centuries old.

To those who ask what is the use of trying to recall the past in this fashion, I would quote a paragraph which appears to sum up the answer :

"For though we pride ourselves on the freedom of our wills, we are less ourselves than we are our ancestors. Their blood beats in our arteries, and our thoughts have to fit themselves as best they can into brain-cells that are part of our inheritance."

It is true that individual life is short; the generations of students come and go, but the great schools remain. There is an apostolic succession in medicine, and the succession of this, our school, would appear to be Padua to Leyden, Leyden to Edinburgh, and Edinburgh to Belfast; and our students are the lineal descendants of the men who tramped round Boerhaave's little wards at Leyden, or who stood in the flickering torchlight, listening to Vesalius, at Padua.

Medicine will have many things to teach you.

"At the door of life, at the gate of breath,
There are worse things waiting for man than death."

And you will see very many piteous sights. Just as every day the tide washes up on a sea-beach, so every day into this great hospital there comes "the turbid ebb and flow of human misery." They will come to you, as they have come to us, for help in their pain and weariness, and you will learn that you cannot be a good doctor without pity.

Again, in medicine more than in any other profession, you will meet with the eccentrics and the oddities of life. You will encounter all sorts and conditions of men, and it should teach you a wider tolerance and a broader understanding, for, "if a man does not keep step with his fellows, perhaps it is because he is listening to a different drummer. Let him step to the music which he hears, however measured, or far away."

And, in this connection, let me recall to you one of the most striking passages in all literature, the famous analysis of charity : "And though I understand all knowledge and all mysteries, and have not charity, I am nothing." And so you may have an understanding of the "mystery and craft" of medicine, but if you have not charity—*caritas*—a tolerant understanding of the humanity of your patient, you are nothing.

Thanks to the labours of the men who have gone—Gordon, Symington, Lindsay, Whitla, Fullerton, Milroy, to name only a few, the Belfast school of medicine is well and honourably known all the world over.

It is right that you should applaud what these men have done for us—but never forget that our future lies with you, with our students. We who are now on the

staff are trustees of a great tradition, but "we grow older with the silent years," and the day will come when we must hand over our trust to our successors. And when that day comes, and

"To you from failing hands, we throw
The torch, be yours to hold it high,"

we know that you will not prove forgetful of that great tradition which has been handed down through the centuries of English medicine, "unchanging to the changeful generations of men."

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AIR RAID PRECAUTIONS

WING-COMMANDER HODSALL TO ADDRESS BELFAST MEETING.

THROUGH the good offices of the Ministry of Home Affairs, a meeting has been arranged for 4th February, 1937, to be addressed by Wing-Commander Hodsall (Under-Secretary of State, Home Office, London, in charge of Air Raid Precautions) and the Principal Medical Officer, Major Blackmore. This is a special opportunity for medical men to become aware of the importance of this subject, as they will be the first line of call for knowledge and help in the event of emergency, and it has been decided that all medical men (whether members of the B.M.A. or not) will be admitted to the meeting. Major Blackmore will be available to answer questions and give information to medical men. This is the first meeting arranged to be held in Northern Ireland on this subject, and the Branch feel honoured that the two principal officials concerned have promised to address the members. It is to be hoped that there will be a large attendance.